Ecosystems: Terrestrial and Aquatic
5-2 **Students will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems.   (Life Science)**

5-2.3   Compare the characteristics of different ecosystems (including estuaries/salt marshes, oceans, lakes and ponds, forests, and grasslands).
Taxonomy level: 2.6-B   Understand Conceptual Knowledge

Previous/Future knowledge: Students have previously learned about habitats and distinct ecosystems in 1st, 2nd, 3rd and 4th grade. They have learned about the characteristics of different environments and how changes can occur. Students have previously learned about rivers and streams, tropical rain forests, deserts and polar regions in 4th grade (4-2.2).

 It is essential that students to know that there are different types of ecosystems (terrestrial and aquatic). These ecosystems can be divided into two types according to their characteristics:

Terrestrial
- Land-based ecosystems include forests and grasslands.
    o *Forests* have many trees (with needles or with leaves), shrubs, grasses and ferns, and a variety of animals. They usually get more rain than grasslands. Temperatures in the forests may vary depending on where the forest is located.
    o *Grasslands* have fertile soil and are covered with tall grasses. They usually get a medium amount of rain, but less than forests. Temperatures may also vary depending on where the grassland is located. Some examples of animals that live in the grasslands are prairie dogs, bison, and grasshoppers.

Aquatic
- Water-based ecosystems may be fresh water (lakes and ponds) or saltwater (oceans, estuaries and saltwater marshes).
    o *Lakes* and *ponds* are bodies of freshwater that are surrounded by land. Ponds are usually shallower than lakes and the temperature of the water usually stays the same from top to bottom. Plants and algae usually grow along the edges where the water is shallow. Some examples of animals may be different types of fish, amphibians, ducks, turtles, or beavers.
    o *Oceans* are large bodies of saltwater divided by continents. Oceans have many types of ecosystems depending on the conditions (sunlight, temperature, depth, salinity) of that part of the ocean.
        ▪ Most organisms live where the ocean is shallow (from the shoreline to the continental shelf) because sunlight can reach deep and the water is warm making food is abundant. Some examples of organisms that live in the shallow ocean may be drifters (jellyfish or seaweed), swimmers (fish), crawlers (crabs), and those anchored to the ocean floor (corals).
        ▪ Some organisms live in the open ocean, near the surface or down to the deep ocean bottom. Plankton float in the upper regions of the water. Some organisms swim to the surface to find food or for air (whales, turtles, sharks) while others stay live closer to the bottom (certain fish, octopus, tubeworms).

- o   *Estuaries* are found where the freshwater rivers meet the oceans. They are saltier than a river, but not as salty as the ocean. The amount of salt (salinity) changes as the tides come in and out. Estuaries contain *salt marshes* with grasses and marsh plants adapted to this changing water. Some examples of animals that live in the estuaries/salt marshes may be crabs, shrimp, birds such as blue heron and egrets, and muskrats.

It is not essential for students to know the different types of forests (coniferous, deciduous, rainforests), to name the specific ocean zones, or the locations of these environments on a map. Students have already studied rainforests, rivers and streams, polar regions, and deserts.

Assessment Guidelines:
The objective of this indicator is to *compare* characteristics of different ecosystems; therefore, the primary focus of assessment should be to for students to detect similarities and differences between aquatic ecosystems and between terrestrial ecosystems. However, appropriate assessments should also require students to *identify* an ecosystem based on its description; or *exemplify* characteristics of each ecosystem.